

A¹
hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^2-CH_2OH$ wherein L^2 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding; and

M is a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, ammonium group, or pyridinium group.

R E M A R K S

Upon entry of the accompanying Amendment, claims 1-9 will be pending in the present application. Claims 1, 8 and 9 are independent claims.

Applicants have amended claims 1-9 by changing the term "derivative" to "compound". Applicants assert that the terms "compound" and "derivative" are equivalent in scope; thus, Applicants have not narrowed the claims in any manner by the instant Amendment. Applicants have not raised any issue of new matter.

Issue Under 35 U.S.C. §112

Claims 1-9 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The Examiner asserts

that the term "derivative" is indefinite. Applicants disagree with the Examiner's rationale for the indefiniteness.

However, Applicants have changed the term "derivative" to "compound" as suggested by the Examiner to advance the prosecution. Applicants assert that the terms "derivative" and "compound" are equal in scope. The instant claims have not been narrowed.

Applicants respectfully request withdrawal of the 35 U.S.C. §112, second paragraph.

Issue under 35 U.S.C. §103(a)

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Buell '363 (USP 3,309,363) in view of Deguchi '742 (USP 5,395,742). Applicants submit that patentable distinctions exist between the cited prior art and the present invention.

Distinctions Between the Present Invention and the Buell '363 in view of Deguchi '742

Buell '363 discloses a 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid di-substituted with substituents from the Table in columns 5 and 6 as optical brightening agents. Buell '363 describes a 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid having four dihydroxypropylamine as substituents. The Table in columns 5 and 6 of Buell '363 shows that different substituents to one triazine

ring may impart to the 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid compound some troublesome properties, such as "[p]recipitates in presence of cationic softener. Whitening effect totally lost." See last row of Table.

Deguchi '742 discloses a method for forming an image which comprises at least one step being carried out in the presence of a 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid that has substituents. Deguchi '742 discloses sulfoethylamino groups as examples of substituents. See Tables set forth in columns 5-8. However, Deguchi '742 only discloses 10 sulfoethylamino groups (SR-5, SR-6, SR-8, SR-10, SR-13, SR-24, SR-25, SR-24, SR-27 and SR-32) in the Tables, while 54 other substituents groups are disclosed.

Among the 10 sulfoethylamino groups, those of SR-5, SR-6 and SR-13 are employed in combination with the same sulfoethylamino group. Those of SR-24, SR-25 and SR-25 are employed in combination with a carboxyethylamino group. Those of SR-10 and SR-27 are employed in combination with sodium carboxyethylamino groups. SR-32 is employed in combination with sodium carboxymethylamino group.

Buell '363 in view of Deguchi '742 fail to disclose the combination of substituents on 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid compound of the formula in claim 1. A skilled artisan would suffer an undue burden of experimentation to make the present invention as limited to the structure of the formula in claim 1.

Buell '363 clearly "teaches away" from the present invention by disclosing that by combining different substituents one gets inferior results such as precipitation. Moreover, Deguchi '742 fails to provide any motivation since all of the combinations of the Deguchi '742 substituents are with similar substituents, such as carboxyethylamino groups.

Applicants have provided experimental data on page 29 of the instant application that indicates that the various combinations of substituents as set forth in Deguchi '742 fail to impart satisfactory solubility to the 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid compound.

The Examiner must present a *prima facie* case of obviousness consisting of motivation or suggestion to modify or combine references such that one of ordinary skill in the art has a reasonable expectation of success of making the present invention. "Obviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." MPEP 2143.01, citing In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Buell '363 in view of Deguchi '742 fail to disclose or suggest that the specific combination of the four substituents of the triazine rings of 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid compound; thus, a *prima facie* case of obviousness has not been presented.

Therefore, patentable distinctions exist between the present invention and the cited references. Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection.

Issue Under 35 U.S.C. §103(a)

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Crounse '548 (USP 3,193,548) in view of Deguchi '742 (USP 5,395,742). Applicants submit that patentable distinctions exist between the cited prior art and the present invention.

Distinctions Between the Present Invention and the Crounse '548 in view of Deguchi '742

Crounse '548 discloses a 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid di-substituted with substituents as optical brightening agents. Similarly to Buell '363, as discussed above, Crounse '548 is silent with respect to the use of sulfoalkylamino group for the substituent of the triazine rings.

The Examiner asserts that Deguchi '742 disclose an aminoalkyl group with two or more hydroxyl and sulfoalkylamino. Applicants traverse this assertion.

Contrary to the Examiner's comment, the definition of L¹ and L² of Deguchi '742 does not include the aminoalkyl with two or more hydroxyl. See column 3, lines 11-33. Deguchi '742 fails to disclose a sulfonic acid group. A skilled artisan would suffer

an undue burden of experimentation to make the present invention as limited to the structure of the formula in claim 1.

Furthermore neither reference suggests the specific combination of aminoalkyl with two or more hydroxy and sulfoalkylamino as set forth in the present claims. As described above, Deguchi '742 fails to suggest differing substituents.

Crounce '548 in view of Deguchi '742 fail to disclose or suggest that the specific combination of the four substituents of the triazine rings of 4,4'-bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid compound; thus, a *prima facie* case of obviousness has not been presented.

"To prevent the use of hindsight based on the invention to defeat patentability of the invention,' this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. In re Rouffet, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998).

Therefore, patentable distinctions exist between the present invention and the cited reference. Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection.

Conclusion

Applicants submit for the reasons stated above that the present claims define patentable subject matter such that this application should be placed into condition for allowance.

If the Examiner has any questions concerning this application, the Examiner is requested to contact Mark W. Milstead, Reg. No. 45,825, at (703) 205-8000 in the Washington, D.C. area.

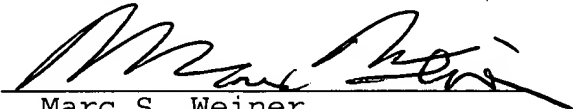
Attached hereto is a marked-up version to show changes made by this amendment to the application.

Pursuant to the provisions of 37 C.F.R. §§ 1.17 and 1.136(a), the Applicants hereby petition for an extension of three (3) months to October 24, 2001, in which to file a reply to the Office Action. The required fee of \$920.00 is enclosed herewith.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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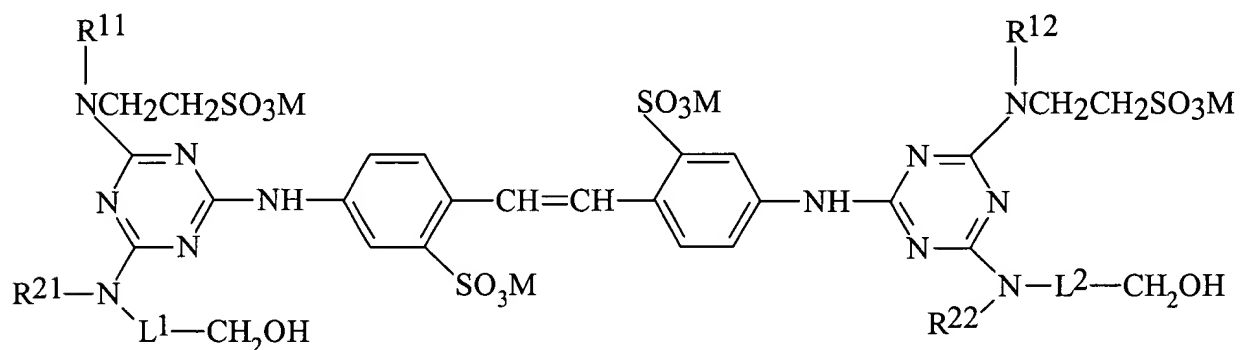
Enclosure: Version with Markings to Show Changes Made

Version with Markings to Show Changes Made

In the Claims:

The claims have been amended as follows:

1. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound having the following formula:



in which

each of R¹¹ and R¹² independently is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, or an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy;

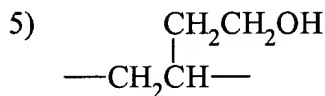
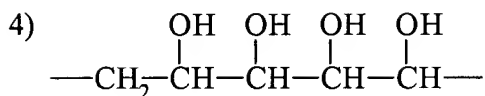
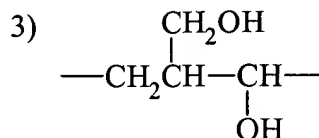
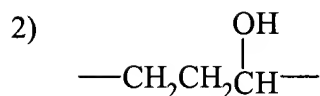
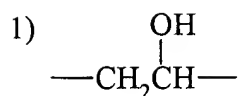
R²¹ is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl or alkoxy, or a group represented by the formula of -L¹-CH₂OH wherein L¹ is an alkylene group having 2 to 8 carbon

atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding;

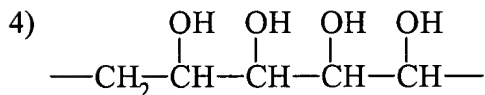
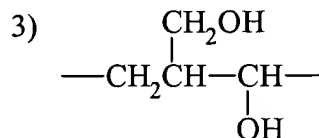
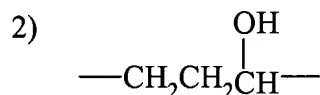
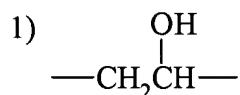
R^{22} is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^2CH_2OH$ wherein L^2 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding; and

M is a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, ammonium group, or pyridinium group.

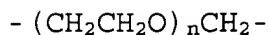
2. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 1, wherein at least one of L^1 and L^2 is a divalent group which is represented by one of the following formulas 1) to 5):



3. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 1, wherein at least one of L¹ and L² is a divalent group which is represented by one of the following formulas 1) to 4):



4. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 1, wherein at least one of L¹ and L² is a divalent group which is represented by the following formula:



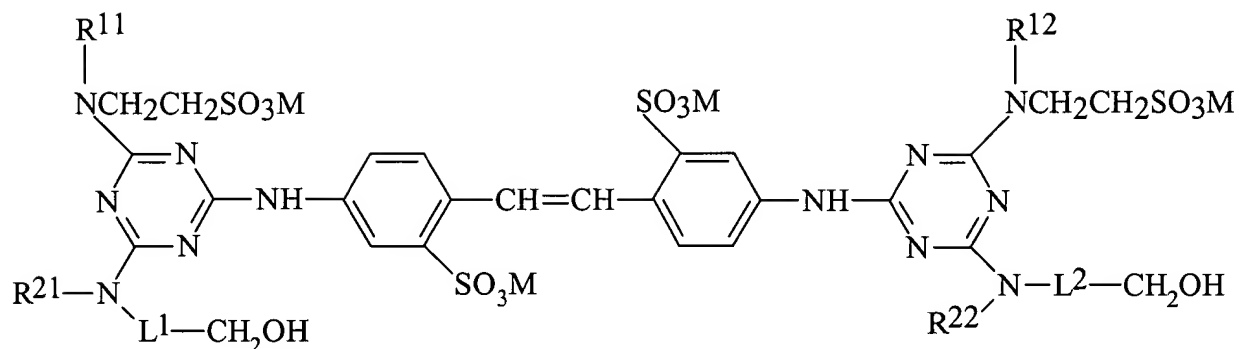
in which n is an integer of 1 to 3.

5. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 4, wherein n in the formula is 1 or 2.

6. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 1, wherein each of R^{11} and R^{12} in the formula independently is a hydrogen or methyl.

7. (Amended) 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound of claim 1, wherein each of R^{21} and R^{22} in the formula independently is hydrogen, methyl, ethyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, 3-hydroxypropyl, 2,3-dihydroxypropyl, 2-(2-hydroxyethoxy)-ethyl, 2-[2-(2-hydroxyethoxy)ethoxy]ethyl, phenyl, or 4-hydroxyphenyl.

8. (Amended) An aqueous solution in which a 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound having following formula is dissolved in water:



in which

each of R^{11} and R^{12} independently is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, or an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy;

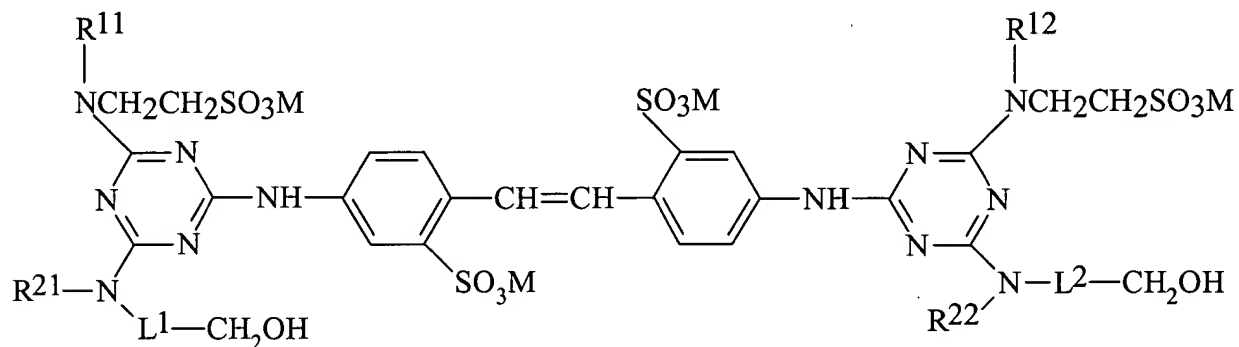
R^{21} is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^1-CH_2OH$ wherein L^1 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding;

R^{22} is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of

hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^2-CH_2OH$ wherein L^2 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding; and

M is a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, ammonium group, or pyridinium group.

9. (Amended) A method of brightening a surface of material with fluorescence which comprises applying onto the surface an aqueous solution in which a 4,4'-Bis(1,3,5-triazinylamino)stilbene-2,2'-disulfonic acid [derivative] compound having the following formula is dissolved in water:



in which

each of R^{11} and R^{12} independently is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, or an alkyl group having

1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy;

R^{21} is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^1-CH_2OH$ wherein L^1 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding;

R^{22} is a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkyl group having 1 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, sulfo, and alkoxy, an aryl group having 6 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl, carboxyl, alkyl, or alkoxy, or a group represented by the formula of $-L^2-CH_2OH$ wherein L^2 is an alkylene group having 2 to 8 carbon atoms which has one or more substituents selected from the group consisting of hydroxyl and hydroxylalkyl having 1 to 3 carbon atoms or which has an intervening ether bonding; and

M is a hydrogen atom, an alkali metal atom, an alkaline earth metal atom, ammonium group, or pyridinium group.